133 the mountain streams which discharge into the lake are perennial, which is not the case on plateaux bordered by lower hills. Against this advantage must be set the strong winds which prevail in winter, due to the juxtaposition of a high mountain and a large sheet of water.

The area of good land is also diminished by the wide "fans" of rock-encumbered soil discharged by the mountain torrents at the point where they debouch on to the plain. This accumulation of boulders and detritus forms a continuous belt about a mile wide of rocky sloping land along the foot of the mountain. It has some value as grazing 312 land, but cannot be cultivated. As the streams leave the lower slopes they are carefully canalised and broken up into an infinity of small channels which distribute water to every plot of ground between the hill slopes and the lake shore. This work of irrigation, undoubtedly of great antiquity, has transformed what must once have been a marsh into a carefully graded series of terraces sloping almost imperceptibly to the lake. As a result the Min Chia farmer is really independent of the monsoon, for he can flood his rice fields from this system of water channels, fed by the perennial streams from Ts'ang Shan.

312 Curiously enough it is the land nearest the shore of the 134 lake which has most to fear from a late monsoon. The level of the lake varies as much as six feet between the dry season and the end of the rainy season, consequently in spring the water is some four to five feet below the level of the adjoining rice fields, which cannot be flooded from this source. As the fields nearer the mountain slopes tend to absorb all or most of the water from the mountain torrents, it sometimes happens that if the monsoon is late the fields nearest to the lake cannot be planted with rice until as much as three weeks after those nearer the mountain. The area adjoining the lake is further subject to some danger of

1: Fitzgerald H-5 (1937-1938) AE3 Sino-Tibetan
Border Peoples AE3

312 flooding in very wet years, when the water of the lake, un-
134 able to escape through the very narrow passage of the Dragon's Tail Pass, overflows on to the flat western shore. Unless the flood becomes so deep as to cover the ears of rice, this does no harm, and such exceptional depths are rare. Yet on account of these two risks the land nearest the lake shore, in appearance the best on the plain, is in fact of less value than fields nearer the mountain slopes.

134 Unlike almost all other parts of Yunnan the soil of the Ta Li plain is not the red clay associated with the prevailing Yunnan limestone rocks, but a heavy black soil due to the fact that Ts'ang Shan is an upthrust of granite breaking
133 through the limestone cap of the Yunnan plateau. This geological peculiarity has one serious disadvantage, the frequency of severe earthquakes on the Ta Li plain. Slight shocks are common in the dry season, especially after one of the winter spells of drizzle, but a major earthquake in the spring of 1925 not only destroyed most of the city of Ta Li but caused much greater havoc and a very heavy loss of life in the lakeside villages, where a wave from the lake did further damage. Local records mention other severe earthquakes in previous centuries, but for many years before 1925 no serious shock had occurred, nor has there been a major earthquake since that date.

311 Apart from a narrow belt of willow groves along the lake shore, where flooding is usual, the entire surface of the plain is under cultivation. The villages as far as possible are built on the shore itself, or on the lowest slopes of the mountain, to free as much land as possible for the cultiva-
[491] tion of rice. Even the main caravan road, a stone-paved path about six feet wide, skirts the slopes of the mountain, and the paths leading to villages and fields are narrow and follow the dykes along irrigation channels. Very little land is devoted to market gardening, usually only such patches by

4: Liu K-4 (no date) 1944 AE3 Sino-Tibetan
Border Peoples AE3

All the slopes that are below an altitude of 6,000 ft. belong to the arid zone, where cultivation without irrigation is difficult. Most of these slopes are barren or covered by only a thin mantle of scrub. At an altitude between 6,000 and 8,000 ft. is the semi-arid zone, where agriculture could be carried on without irrigation, but the situation is usually precarious. Unfortunately, most of the cultivable lands are situated in this zone. The dominating crops between 6,000 and 7,000 ft. are corn, beans, and wheat; and those grown between 7,000 and 8,000 ft. are mostly barley, oats, buckwheat, and potatoes.

From an altitude between 8,000 to over 9,000 ft. is the wet zone, and this is the forest zone. Above the forest zone is the sub-humid zone, and this is the grass land area where the high degree of wetness and the shortness of the growing season limit agriculture and favor the grazing of cattle. This is also the homeland of a great variety of medicinal herbs.

The limitations of relief and climate have in their turn affected the nature of the soil. Soil on the upper slopes, where agriculture is carried on, is subject to severe erosion; while soil on the valley bottoms is liable to be washed away by streams. Therefore, the most spectacular feature of the soil is that of instability. There is hardly any well-developed mature soil to be found anywhere. In the grasslands, the soil is better developed, but the temperature limits its utilization.

This is only a brief summary of the setting of the stage upon which a group of tribes people are carrying on their drama of life. Now, we will proceed to examine the tribes who are staged there.

B. THE TRIBES OF LI-FAN COUNTY

The total population of Li-fan county is about 80,000, which is about one-fourth the population of Chengtu. Of course there is no accurate census to tell the truth. This is only a rough estimate from the figures given by the Szechwan Commission of Education. Out of the total population, about one-eighth are Chinese and seven-eighths are tribes people. They are the Ch'iang羌, the Gia-rung嘉戎, the Fan番, and the Black River peoples. They are all of Tibetan descent, with a combined or fused Tibetan-Chinese culture at different stages of development.

The Ch'iang people used to occupy a much larger area than they do now. Archaeological finds indicate that they had spread as far north as Kansu before the Han dynasty. During the Ming dynasty, because they made trouble, the Tibetans were called in to conquer them, and finally there were cornered into a smaller and smaller area between the Chinese on the plains, and the Tibetans in the mountains. At present the Ch'iang people are on the verge of disappearing, and their culture is already half-forgotten. The Gia-rung people are the Tibetan conquerors who have taken to agriculture, and the Fan are the Tibetans who have come to stay in the grasslands and are still leading a nomadic type of life. The Black River people are a mixed people of Fan, Gia-rung and Ch'iang. They are half agricultural, but still rely on their cattle for much of their living.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16
Sino-Tibetan Border AE3

dumped on a rock pile. The fields are poor and full of stones.[1] Lime-stone is everywhere and the soil hardened clay. Most of the people of this village are afflicted with goitre, and cretins are common, as the 30 families constantly intermarry with each other, there being no other Li-su in the neighborhood. The women wear false hair or rather a queue of black cotton thread, to the two ends of which they tie red-dyed yak or horse-hair (PLATE 236). Wound around their heads are also strings of thick disks of white conchshell, interspersed with a reddish transparent cornelian. They wear short pleated skirts of hemp cloth, which they weave themselves from the fibre of the female *Cannabis sativa*. The children go entirely naked and are black from filth.

From this Li-su hamlet we descend zigzag over a dusty rocky trail, to the stream-bed at 6,220 feet. Another path, the one to be preferred although longer, leads along the steep slopes, in and out of lateral ravines, over landslides down to the mouth of the arid valley. The vegetation which is of a xerophytic character is composed of *Phyllanthus emblica*, Albizzia, Wikstroemia, *Maba buxifolia*, *Dodonaea viscosa*, compositae and *Heteropogon contortus* grass which gives the landscape a reddish-brown aspect. Here also is to be found the monotypic genus *Delavaya* (species) *yünnanensis*.

The Yangtze. — We continue over a rocky spur to the Yangtze, which at the junction with the Tsui-yi Stream flows as a swift rapid. Here the river makes a sharp bend south, caused by an enormous bluff, on the Li-chiang side. Here a ferry plies from Yung-ning to the hamlet of Chiang-wai or Chiang-wa 江[山] on the west bank of the Yangtze. (*See* journey from Ming-yin-wu to Chiang-wai, p. 243). Massive mountains hem in the Chin-sha Chiang; they rise many thousands of feet above its bed, red, brown, and grey in all their aridity. Looking north the river issues from a succession of terrific defiles, through which narrow footpaths lead to La-pao and Feng-k'o. La-bpu mbu, a prominent hill over 10,000 feet in height, where we photographed the Yangtze in its gorges (PLATE 100), is visible from the Tsui-yi bluff.

The distance from She-lü-lü-t'o to the mouth of Tsui-yi is 50 li.

4. FROM YUNG-NING TO SHANG FENG-K'O AT APEX OF YANGTZE LOOP

This is the northernmost route to the Yangtze from Yung-ning. It traverses a region which rivals the valley of Tsui-yi, although less fertile and not so suitable to rice culture. It is inhabited by both Hsi-fan and Hli-khin tribespeople.

The region is extremely mountainous and densely forested. There are, however, no high meadows such as are found on Wua-ha Shan *en route* to Tsui-yi. The only arable area is in the long valley of Luë-dzu law-k'aw which in its lower part merges with another but shorter valley called Hĕr-dü or Hăr-lĕr-dü in Na-khi. This region is notorious for its highwaymen who practise their nefarious trade north of Li-chiang; they frequent lonely mountain trails, on the eastern slopes of the Yü-lung Shan and its meadows, as at Nga-ba. The region near the Yangtze, that is the lower parts of Luë-

1 [The Li-su village of Ba-ssu-ko -- Analy st]